

REMARKS

Claims 1-20 are pending.

Summary of Claimed Subject Matter

In the present invention, the physical disruption is carried out simultaneously with the alkali treatment. Thus, even though nucleic acid and insoluble substances, such as cell wall, are released along with PHA from the microbial cells by the alkali treatment, the cells are completely disrupted and the released constituents are micronized (especially nucleic acid are fractionated and degraded) to prevent viscosity elevation and promote the alkali solubilization of insoluble substances. Thus, the present invention results in enhanced PHA yields in a single method step.

Claim Rejections

Claims 1-20 stand rejected under 35 U.S.C. 103(a) as allegedly being allegedly obvious over Harrison, et al., "Combined chemical and mechanical processes for the disruption of bacteria," Bioseparation, Vol. 2, No. 2, 1991, pp. 95-105 ("Harrison") or JP 2001/057895 to Osamu et al. ("Osamu") or EP 0046017 to Walker et al. ("Walker") in further view of each other and in further view of JP 7031487 to Masako ("Masako 1"), JP 7031488 to Masako ("Masako 2"), US 6,808,907 to Honma ("Honma"), or WO 92/22659 to Kanebo ("Kanebo"). Applicants traverse the rejections.

Claim 1 is directed to a method of recovering a polyhydroxyalkanoate from a polyhydroxyalkanoate-containing microbial cell, which includes the step a) of adding an alkali to an aqueous suspension of the polyhydroxyalkanoate-containing microbial cell *while* stirring and carrying out a physical disruption treatment to disrupt the cell. Neither Harrison, Osamu, or Walker disclose all the limitations of claim 1.

Harrison discloses the use of chemical pretreatment to decrease cell wall strength *prior to* mechanical breakage by homogenization. Abstract. According to the Abstract and Table 1, Harrison discloses that alkali is added before physical disruption, and does not disclose adding an alkali while stirring and carrying out a physical disruption treatment of the cell. Furthermore, Harrison discloses that the homogenization is carried out at neutral pH *after* alkaline pretreatment and neutralization treatment. See, e.g., Harrison, page 96, right column,

the last sentences of the first and second full paragraphs; page 98, left column, lines 9-17. However, Harrison does not disclose physical disruption treatment being carried out *while* adding an alkali, as in Applicants' claim 1. Moreover, there is neither teaching nor suggestion in the cited prior art, such as Harrison, to modify Harrison's method to provide Applicants' claimed method. Thus, Harrison fails to render obvious the instant claims.

Osamu discloses a method of adding an alkali and/or a surfactant to a suspension of microbial cells of PHA-containing microorganism. As the Examiner admits, Osamu "does not indicate that there is a physical disruption treatment to obtain the PHA from the cell" (Office Action, page 4). Thus, Osamu fails to render obvious claims 1-20.

Walker discloses a process of recovering PBH by adding an alkali to an aqueous solution of *Alcaligenes eurotrophus* which flocculants were separated by decanting. However, Walker does not disclose adding the alkali while the decanting step is done. Thus, Walker fails render obvious all the limitations of claims 1-20.

Osamu or Walker fails to cure the deficiencies of Harrison. Masako 1, Masako 2, Honma, and Kanebo are not cited for and do not disclose the step of adding the alkali during the physical disruption treatment, recited in claim 1. Thus, Harrison, Osamu, or Walker further in view of each other plus in further view of Masako 1, Masako 2, Honma, and Kanebo would not have rendered claims 1-20 obvious.

Therefore, for at least the above reasons, claim 1 and its dependent claims 2-20 are not obvious over Harrison or Osamu or Walker, or further in view of each other, plus further in view of Masako 1, Masako 2, Honma, and Kanebo. Withdrawal of the obviousness rejections is therefore requested.

Conclusion

In view of the above amendments and remarks, it is believed that the above-identified application is in condition for allowance, and notice to that effect is respectfully requested. Should the Examiner have any questions, the Examiner is encouraged to contact the undersigned at the telephone number indicated below.

The Commissioner is authorized to charge any fees or credit any overpayments which may be incurred in connection with this paper under 37 C.F.R. §§ 1.16 or 1.17 to Deposit Account No. 11-0600.

Respectfully submitted,

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